



Scale: 5" / 100'  
Measured Depth Log

Well Name Rohn State LD03-63-1HN

Location SESE SEC 4 T9N R58W

State COLORADO

County WELD

Country USA

Rig Number H&P 273

API Number 05-123-37471

Field WILDCAT

Region DJ BASIN

Drilling Completed 9/13/2014

Spud Date 9/7/2014

Surface Coordinates 774' FSL; 330' FEL

Bottom Hole Coordinates 990' FFSSL; 660' FFELL

Ground Elevation 4706'

K.B. Elevation 4730'

Logged Interval 4915' To 10023'

Total Depth 10023'

Formation NIOBRARA

Type of Drilling Fluid LSND

## Operator

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200  
Denver, CO 80202

## Geologist

Name RENEE CLACKER

Company NOBLE ENERGY INC.

Address 1625 Broadway Suite 2200  
Denver, CO 80202

## Other

Wellsite Geologist #1 Laura Kellogg

Wellsite Geologist #2 Garrett Luallen

Wellsite Geological Services Provided By Columbine Logging








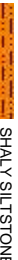




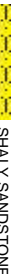













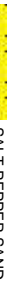






## Zone Color Coding

Oil  
Note  
Error






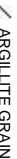








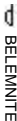
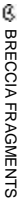








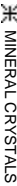







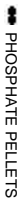

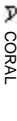
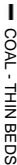


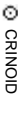

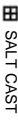





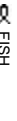


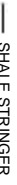
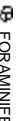
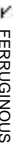


Condensate  
Core  
Water

Gas  
Pres  
Sea







Rock Types

	CHALK		CEMENT		IGNEOUS		SHALE GRAY
	MARLSTONE		CHERT		SIDERITE or LIMONITE		SHALY SILTSTONE
	SANDSTONE		CLAY CHOQE SANC		LIMESTONE		SILTSTONE
	SHALY SANDSTONE		CLAYSTONE		METAMORPHIC		TILL
	SILTY SHALE		COAL		NO SAMPLE		TUFF
	UNKNOWN		CONGLOMERATE		SALT		WELDED TUFF
	ANHYDRITE		DOLOMITE		SALT-PEPPER SAND		
	BENTONITE		GRANITE		SHALE		
	BRECCIA		GYPSUM		SHALE COLORED		

Accessories

	F FOSSIL		ARGILLACEOUS		GLAUCONITE		TUFFACEOUS
	GASTROPOD		ARGILLITE GRAIN		GYPSIFEROUS		
	OOLITE		B BENTONITE		HEAVY MINERAL		
	AMPHIPORA		BITUMENOUS SUBSTANCE		INOCERAMUS		ANHYDRITE STRINGER
	BELEMNITE		BRECCIA FRAGMENTS		K KAOLIN		BENTONITE STRINGER
	BIOCLASTIC		CALCAREOUS		TR MARLSTONE		COAL STRINGER
	BRACHIOPOD		CARBONACEOUS FLAKES		TR MINERAL CRYSTALS		DOLOMITE STRINGER
	BRYOZOA		CHTDK		TR NODULES		GYPSUM STRINGER
	CEPHALOPOD		CHITL		TR PHOSPHATE PELLETS		LIMESTONE STRINGER
	CORAL		COAL - THIN BEDS		P PYRITE		MARLSTONE (CALC) STRG
	CRINOID		DOLOMITIC		B SALT CAST		MARLSTONE (DOL) STRG
	ECHINOID		+ FELDSPAR		TR SANDY		SANDSTONE STRINGER
	FISH		FERRUGINOUS PELLETT		TR SILICEOUS		SHALE STRINGER
	FORAMINIFERA		FERRUGINOUS		TR SILTY		SILTSTONE STRINGER

Oil Show

	MOLDIC
	ORGANIC
	P PINPOINT
	DEAD
	EVEN
	VUGGY

Engineering

	QUESTIONABLE
	SPOTTED STAINING
	BIT

Porosity

	CONNECTION (LEFT)
	CONNECTION (RIGHT)
	FENESTRAL
	CONNECTION GAS
	FRACTURE
	CORE - LOST
	INTERCRYSTALLINE
	CORE - RECOVERED
	INTEROOLITIC
	DST INTERVAL

# Other Symbols

 FAULT       WIRELINE TESTED - LEFT    **E** EARTHY

 FORMATION TOP       WIRELINE TESTED - RT    **FX** FINELYXLN

 GAS SHOW      **GS** GRAINSTONE

 MINDEPTH    MN DEPTH      **L** LITHOGRAPHIC

## Rounding

 NORMAL FAULT      **A** ANGULAR      **MX** MICROXLN

 OIL SHOW      **R** ROUNDED      **MS** MUDSTONE

 OVERTURNED STRATA      **B** SUBANG      **PS** PACKSTONE

 REVERSE FAULT      **F** SUBRND      **WS** WACKESTONE

 SIDEWALL CORE (LEFT)


## Textures

 SIDEWALL CORE (RIGHT)

## Sorting

 SLIDE      **BS** BOUNDSTONE      **M** MODERATE

 SURVEY      **C** CHALKY      **P** POOR

 TRIP GAS      **CX** CRYPTOXLN      **W** WELL

Slide/Rotate

ROP

ROP

Total Gas & Chromatograph

GAS

C1

C2

C3

C4

COLUMBINE LOGGING INC.  
RIGGED UP ON 9/08/2014  
MANNED 2-PERSON LOGGING  
WITH BLOODHOUND GAS  
CHROMATOGRAPH UNIT  
#0680 COLUMBINE BEGAN  
LOGGING ON 9/09/2014

50' Sample Interval

BEGAN DRILLING CURVE  
@ 10:45 PM 09/09/2014

BHA BIT:

8.750" SECURITY MMD55M

Serial #: 12451137

Jets: 5X15

1438u

1259u

Depth Labels

% Lith

Gamma

GAMMA

Well Bore  
TVD

Oil Show

Images

The ratings are based on 7 descriptors:  
None, Slight trace, Trace,Fair, Moderate,  
Good, and Excellent. The descriptor used  
is based on the loggers observations and  
best judgment of brilliance, color and  
longevity of the cut.

SLTY SH: lt gy-dk gy, sb blk-y-sb  
plty, v sft, slty tex, arg cnt  
SHY SS: ltgy-gy, sb ang, v sft, f-v  
f gr, w rnd, mod str, p por, arg  
cnt

SLTY SH: lt gy-dk gy, sb blk-y-sb plty, v sft,  
slty tex, arg cnt, tr SHY SS

SLTY SH: lt gy-dk gy, sb blk-y-sb plty, v sft,  
slty tex, arg cnt

WT IN 10.15/ OUT 10.50  
VIS IN 33/ OUT 48

MD: 4.932 '  
TVD: 4,908.35 '  
Inclination: 0.23 °  
Azimuth: 134.55 °  
VS: 169.31 '

MD: 4.953 '  
TVD: 4,929.35 '  
Inclination: 0.19 °  
Azimuth: 162.1 °  
VS: 169.36 '

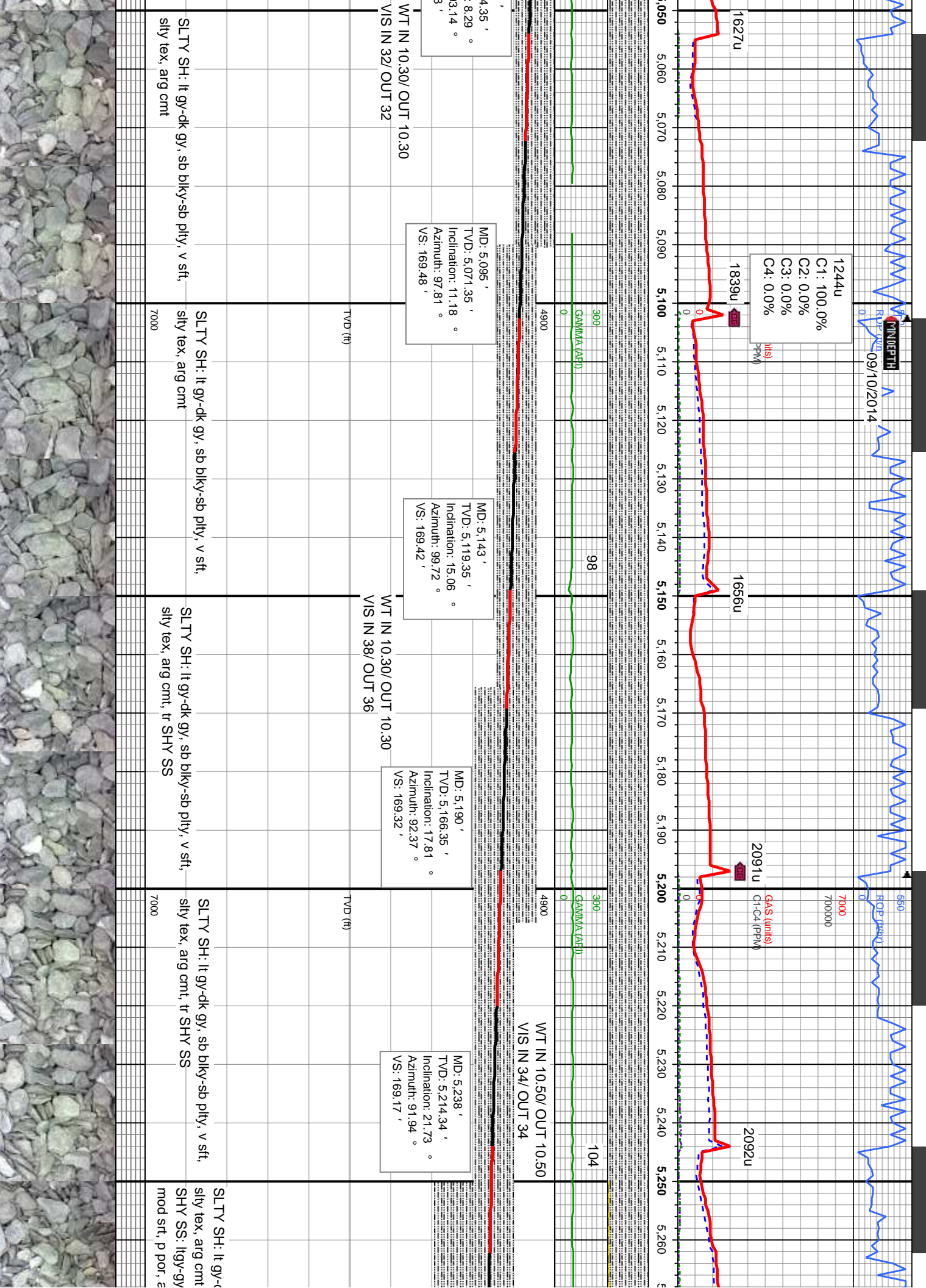
MD: 5.000 '  
TVD: 4,976.35 '  
Inclination: 3.48 °  
Azimuth: 78.79 °  
VS: 169.44 '

MD: 5.048 '  
TVD: 5,02 '  
Inclination:  
Azimuth: 9  
VS: 169.48

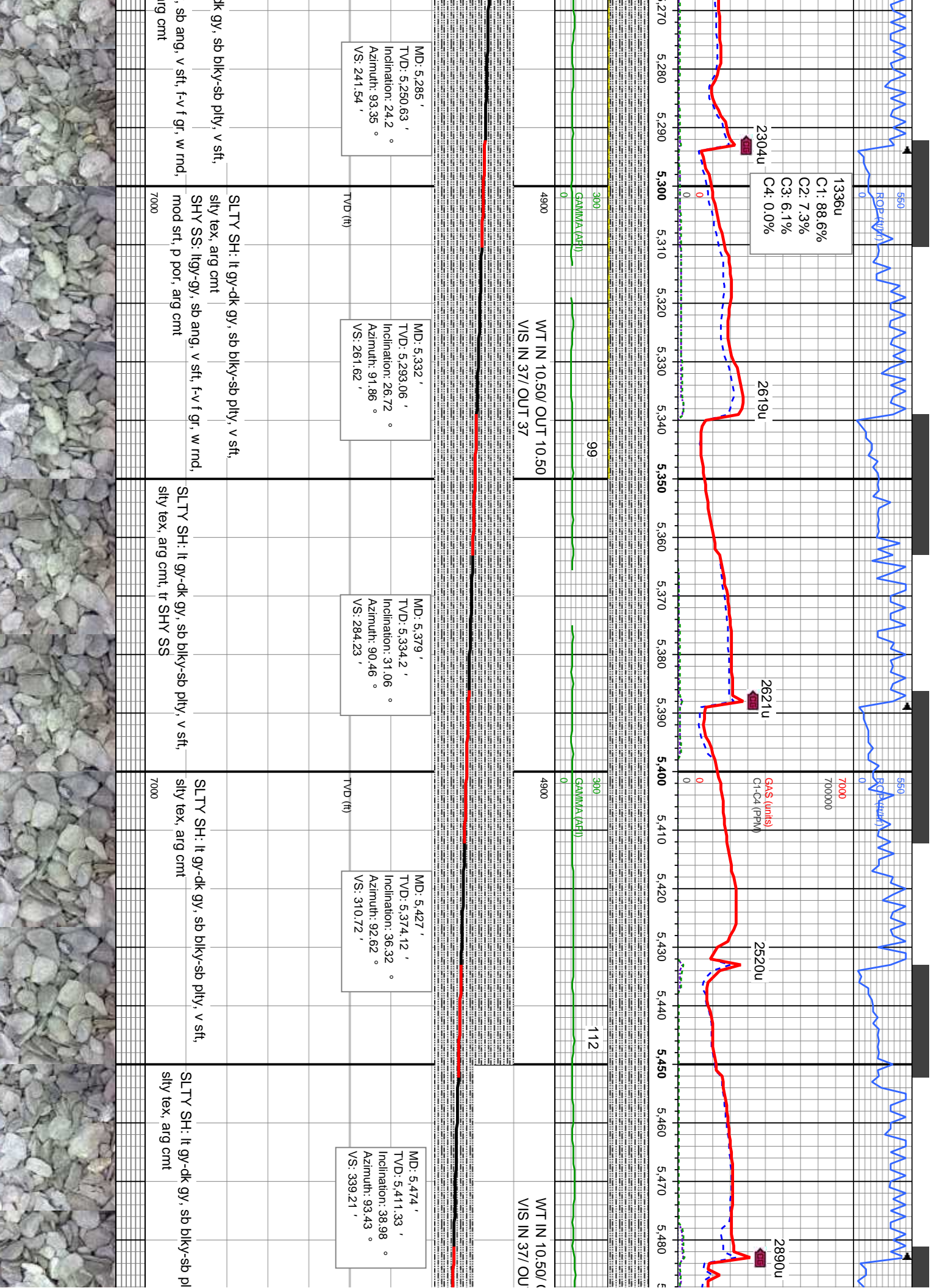
TVD (ft)

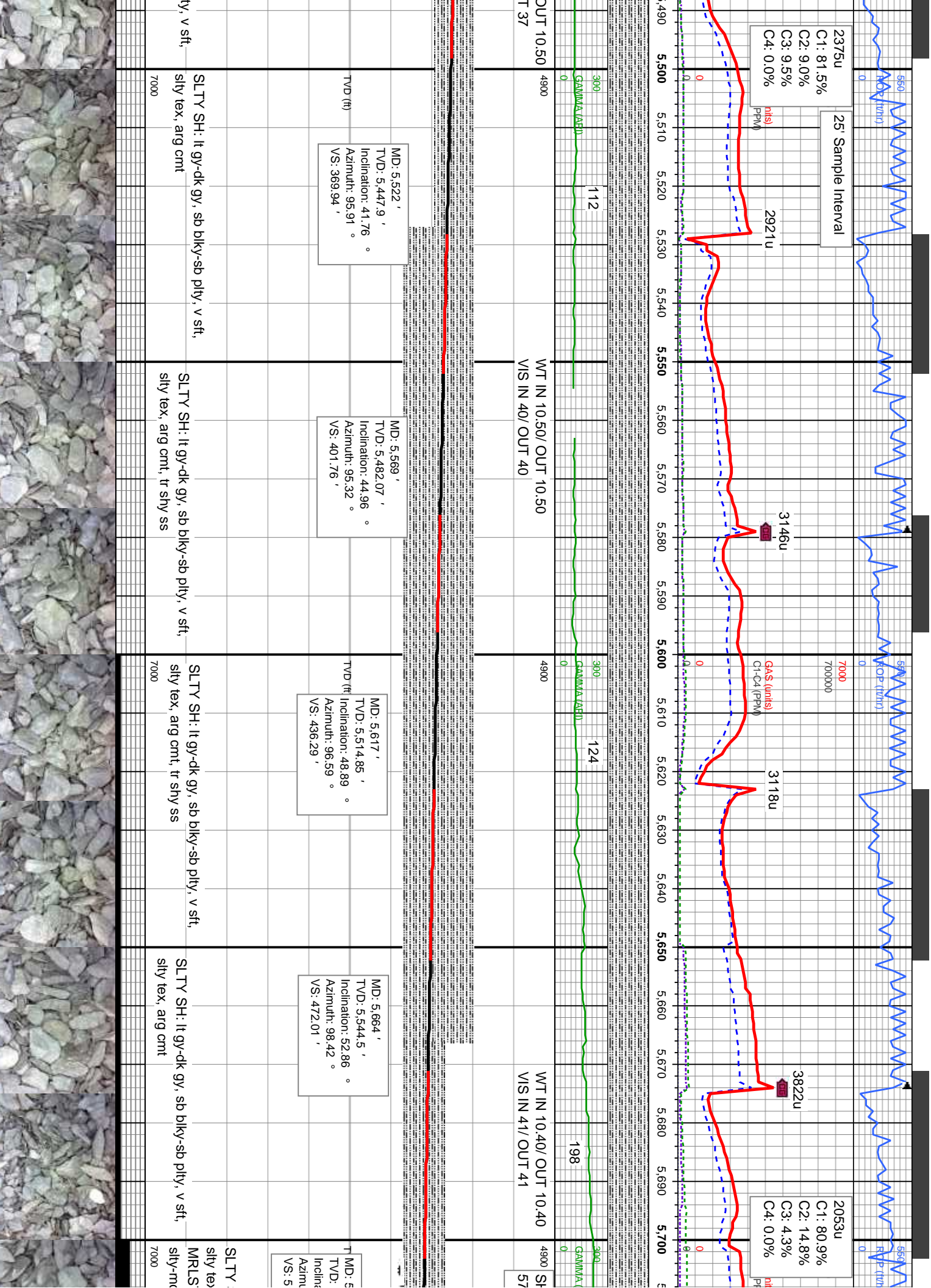
TVD (ft)



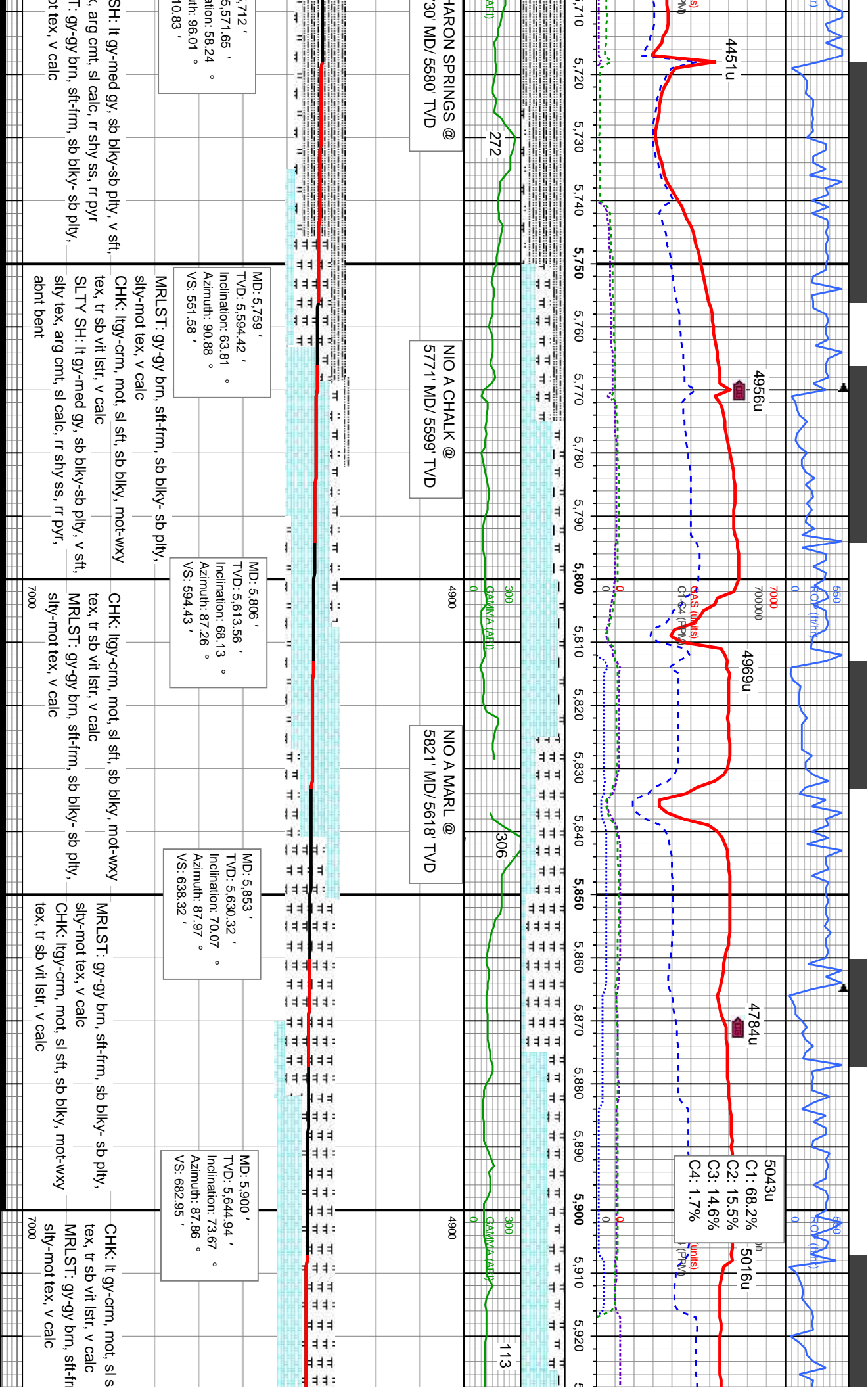




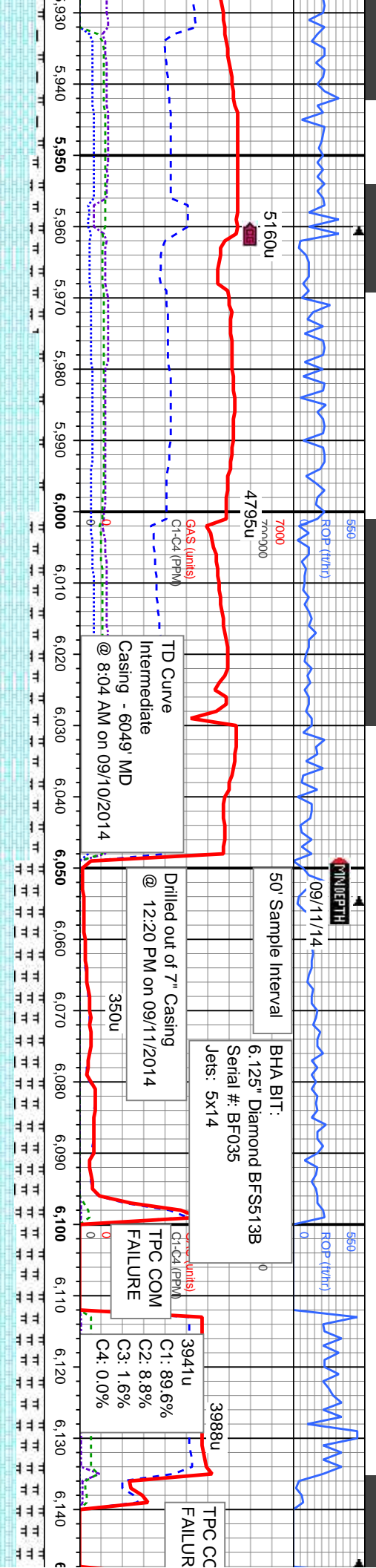












WT IN 10.40/ OUT 10.40  
VIS IN 41/ OUT 41

WT IN 10.40/ OUT 10.40  
VIS IN 35/ OUT 34

MD: 5.947 '  
TVD: 5.656.21 '  
Inclination: 78.58 °  
Azimuth: 87.22 °  
VS: 728.55 '

MD: 5.995 '  
TVD: 5.665.1 '  
Inclination: 80.08 °  
Azimuth: 87.28 °  
VS: 775.71 '

MD: 6.049 '  
TVD: 5.672.11 '  
Inclination: 85 °  
Azimuth: 87.28 °  
VS: 829.23 '

MD: 6.084 '  
TVD: 5.677.32 '  
Inclination: 84.13 °  
Azimuth: 88.28 °  
VS: 863.81 '

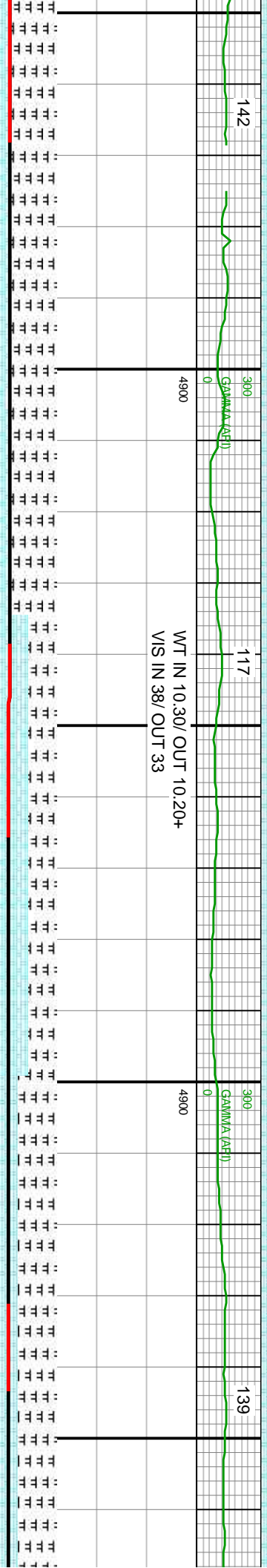
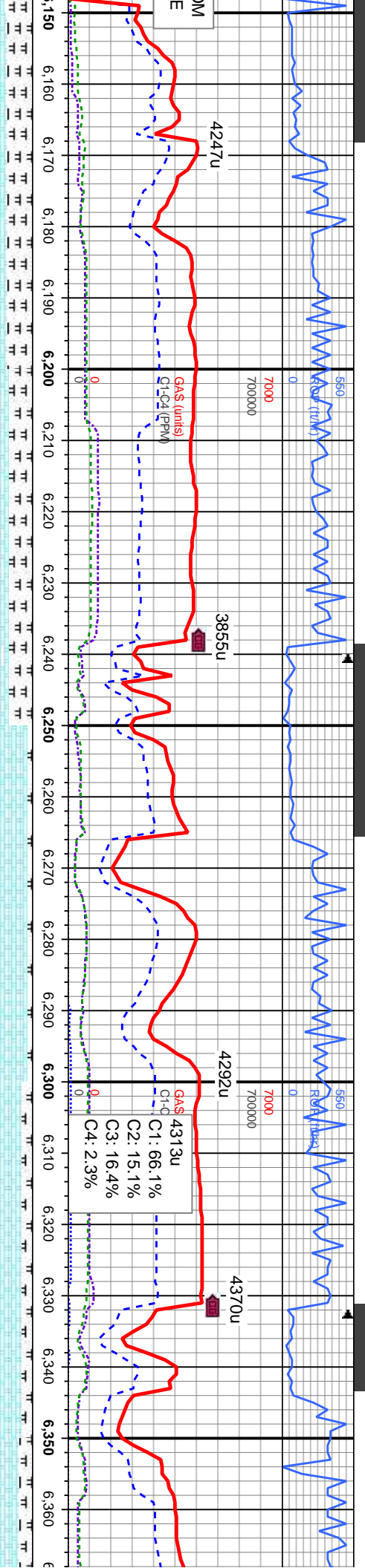
ft. sb blkly, mot-wxy  
blkly, mot-wxy tex, tr sb vit lsfr, v calc  
MRLST: gy-gy brn, sft-frn, sb blkly- sb plty, silty-mot tex, v calc

CHK: lt gy-crm, mot, sl sft - mod frm, sb mot-wxy tex, tr sb vit lsfr, v calc  
MRLST: gy-gy brn, sft, sb blkly- sb plty, silty - mot tex, v calc

MRLST: gy-gy brn, sft, sb blkly- sb plty, silty - mot tex, v calc  
CHK: lt gy-crm, sl sft - mod frm, sb blkly, wxy tex, tr sb vit lsfr, v calc

MRLST: gy-gy brn, sft, sb blkly- sb plty, silty - mot tex, v calc  
CHK: lt gy-crm, sl sft - mod frm, sb blkly, wxy tex, tr sb vit lsfr, v calc





MD: 6,176 '  
TVD: 5,685.49 '  
Inclination: 85.68 °  
Azimuth: 88.22 °  
VS: 955.38 '

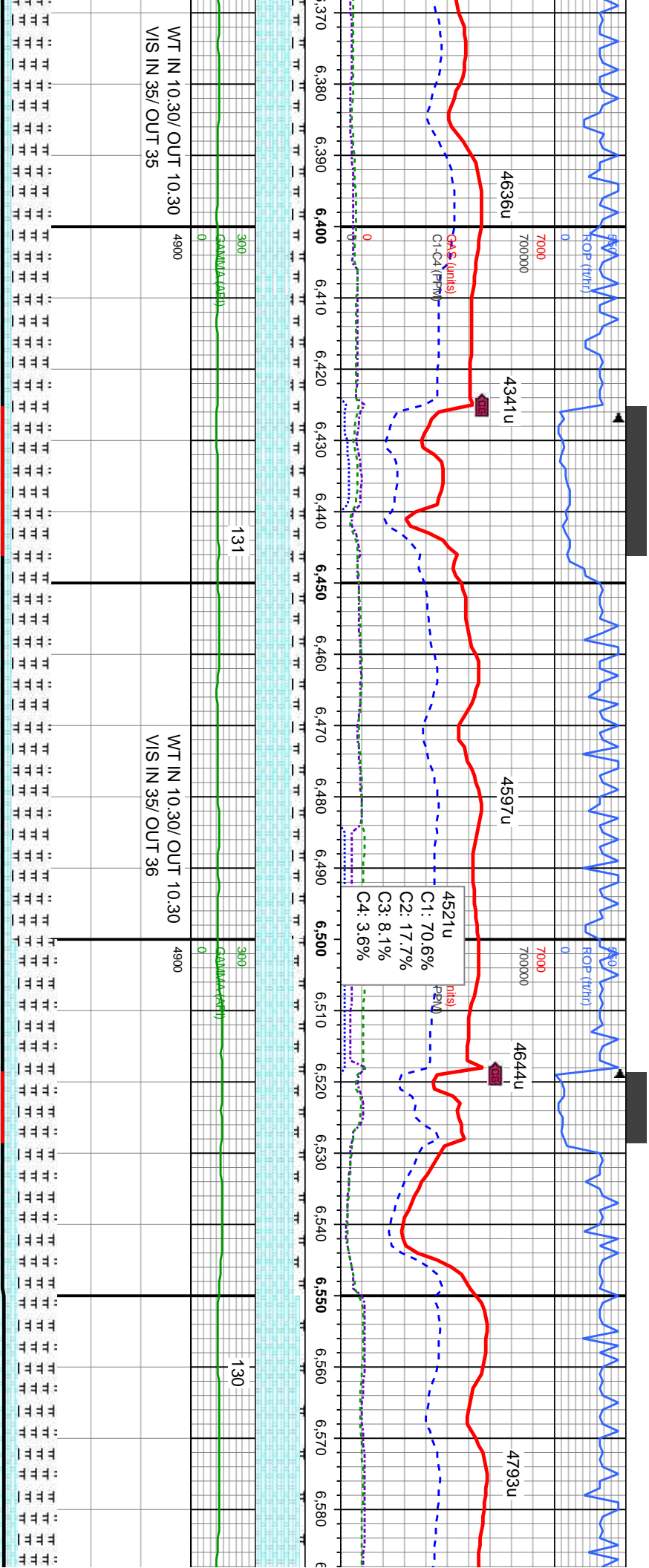
	TVD (ft)			TVD (ft)				TVD (ft)		
MRLST: gy-gy brn, sft - mod frm, sb blk- sb		CHK: It gy-crm, sl sft - mod frm, sb blk, wxy		MRLST: gy-gy brn, sft - mod frm, sb blk- sb		CHK: It gy-crm, sl sft - mod frm, sb blk, wxy		MRLST: gy-gy brn, sft - mod frm, sb blk- sb		CHK: It gy-crm, sl sft - mod frm, sb blk, wxy
ply, silty - mot tex, v calc		tex, tr sb vit lstr, v calc		ply, silty - mot tex, v calc		tex, tr sb vit lstr, v calc		ply, silty - mot tex, v calc		tex, tr sb vit lstr, v calc
MRLST: It gy-crm, sl sft - mod frm, sb blk, wxy		MRLST: gy-gy brn, sft - mod frm, sb blk- sb		MRLST: gy-gy brn, sft - mod frm, sb blk- sb		MRLST: gy-gy brn, sft - mod frm, sb blk- sb		MRLST: gy-gy brn, sft - mod frm, sb blk- sb		MRLST: gy-gy brn, sft - mod frm, sb blk- sb
ply, silty - mot tex, v calc		ply, silty - mot tex, v calc		ply, silty - mot tex, v calc		ply, silty - mot tex, v calc		ply, silty - mot tex, v calc		ply, silty - mot tex, v calc
7000		7000		7000		7000		7000		7000

MD: 6,269 '  
TVD: 5,690.09 '  
Inclination: 88.64 °  
Azimuth: 87.31 °  
VS: 1,048.21 '

MD: 6,362 '  
TVD: 5,691.07 '  
Inclination: 90.15 °  
Azimuth: 85.96 °  
VS: 1,141.19 '







WT IN 10.30/ OUT 10.30 VIS IN 35/ OUT 35	4900	MD: 6,454 ' TVD: 5,689.85 ' Inclination: 91.36 ° Azimuth: 91.27 ° VS: 1,233.06 '	CHK: lt gy-crm, sl sft - mod frm, sb blkly, wxy tex, tr sb vit lstr, v calc MRLST: gy-gy brn, sft - mod frm, sb blkly- sb ply, slty - mot tex, v calc
WT IN 10.30/ OUT 10.30 VIS IN 35/ OUT 36	4900	MD: 6,549 ' TVD: 5,689.01 ' Inclination: 89.66 ° Azimuth: 89.35 ° VS: 1,327.79 '	CHK: lt gy-crm, sl sft - mod frm, sb blkly, wxy tex, tr sb vit lstr, v calc MRLST: gy-gy brn, sft - mod frm, sb blkly- sb ply, slty - mot tex, v calc

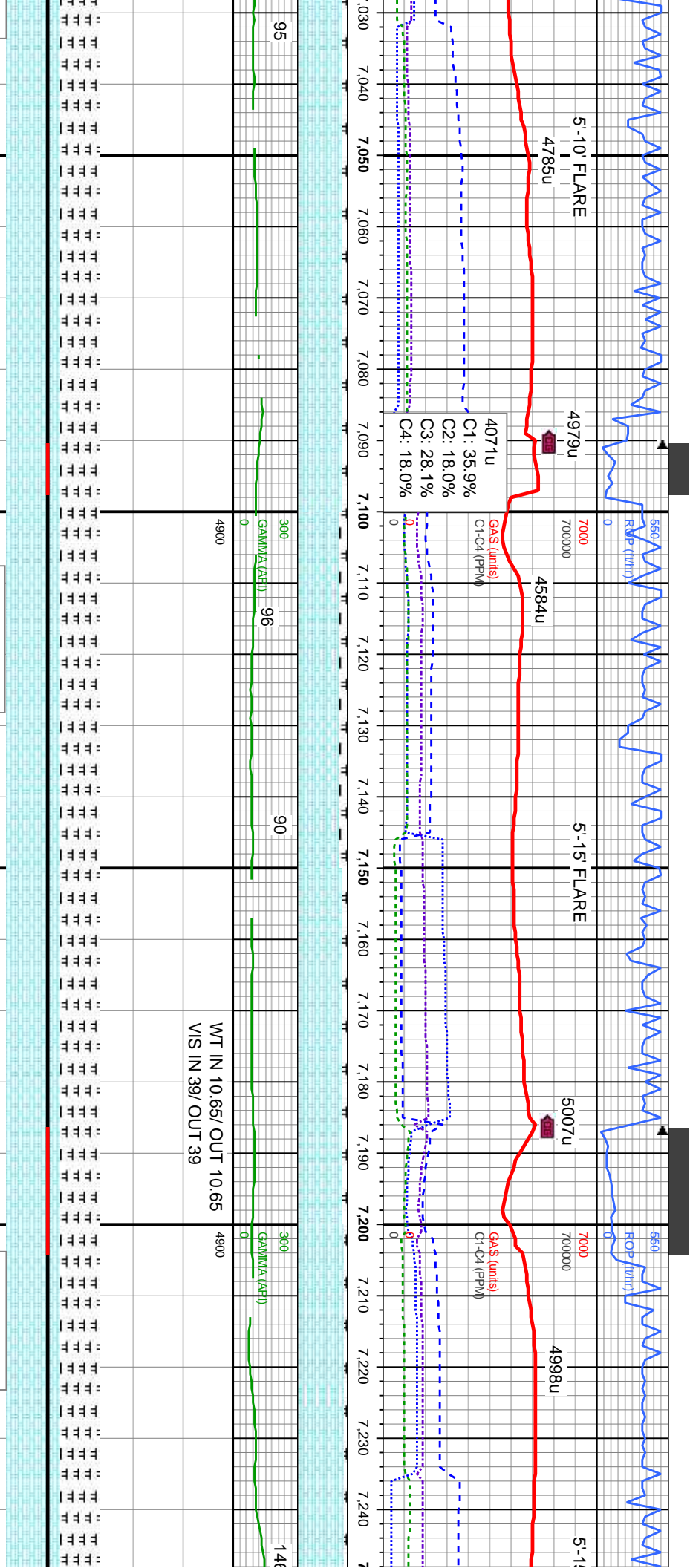












95	300 GAMMA (API)	96	90	300 GAMMA (API)	146
	4900			4900	
				WT IN 10.65/ OUT 10.65 VIS IN 39/ OUT 39	
1 °					
MD: 7,118 ' TVD (ft): 5,680.54 ' Inclination: 90.09 ° Azimuth: 89.1 ° VS: 1,895.87 '				MD: 7,212 ' TVD (ft): 5,681.78 ' Inclination: 88.4 ° Azimuth: 88.27 ° VS: 1,989.76 '	
CHK: It gy-crm, sl sft - mod frm, sb blkly, wxy MRLST: gy-gy brn, sft - mod frm, sb blkly- sb blkly- sb blkly, sily - mot tex, v calc		CHK: It gy-crm, sl sft - mod frm, sb blkly, wxy tex, tr sb vit lsfr, v calc MRLST: gy-gy brn, sft - mod frm, sb blkly- sb blkly, sily - mot tex, v calc		CHK: It gy-crm, sl sft - mod frm, sb blkly, wxy tex, tr sb vit lsfr, v calc MRLST: gy-gy brn, sft - mod frm, sb blkly- sb blkly, sily - mot tex, v calc	
7000		7000		7000	

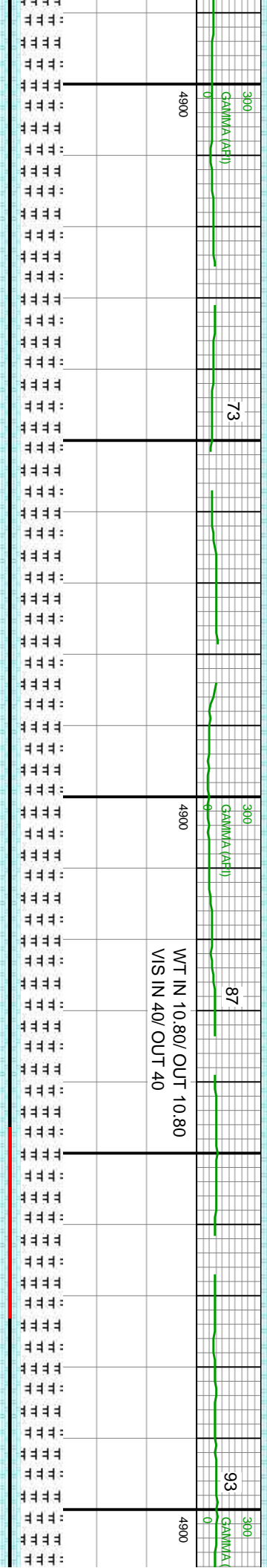
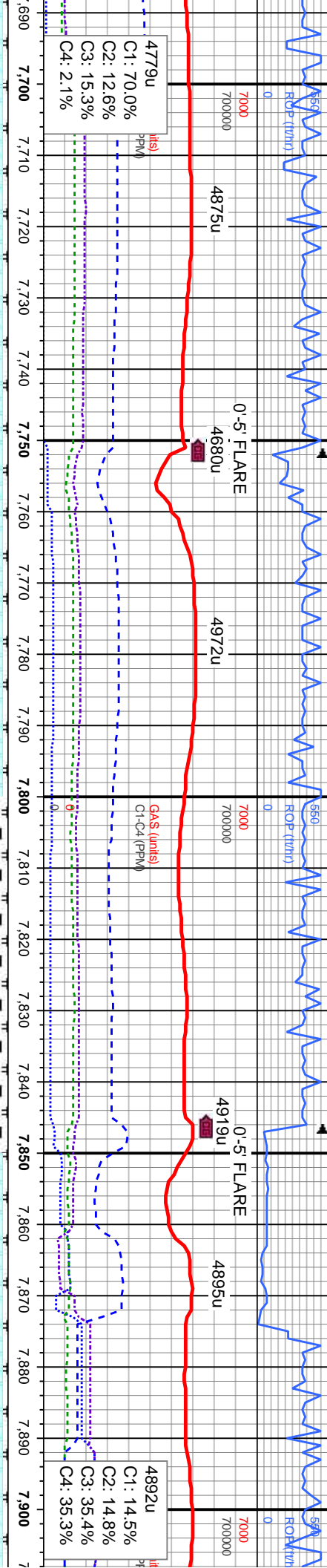








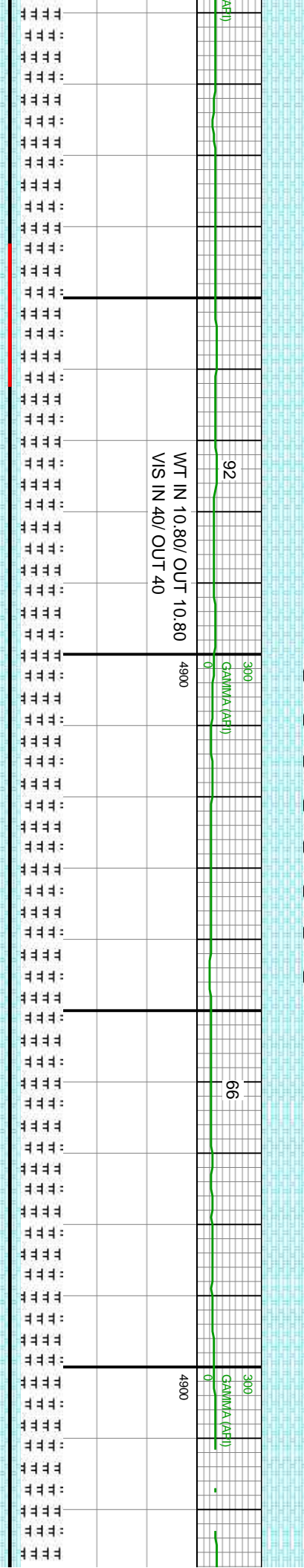
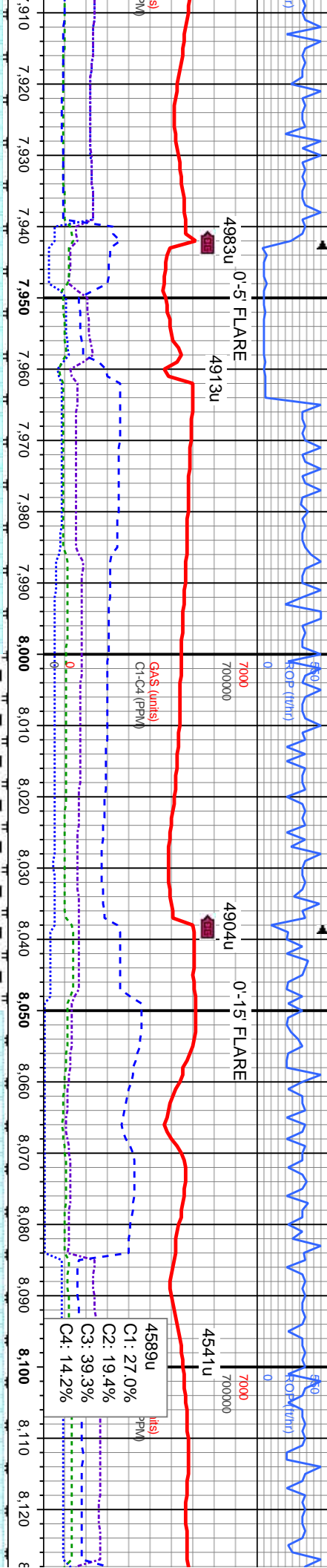




39 ' °	MD: 7.781 ' °	MD: 7.876 ' °	39 ' °
° 48	TVD: 5.685.24 ' °	TVD: 5.683.4 ' °	° 48
° 4	Inclination: 91.79 °	Inclination: 90.43 °	° 4
	Azimuth: 87.7 °	Azimuth: 88.25 °	
	VS: 2.558.4 ' °	VS: 2.653.32 ' °	
CHK: It gy-crm, sl sft - mod frm, sb blkly, wxy	CHK: It gy-crm, sl sft - mod frm, sb blkly, wxy	CHK: It gy-crm, sl sft - mod frm, sb blkly, wxy	CHK: It gy-crm, sl sft - mod frm, sb blkly, wxy
tex, tr sb vit lstr, v calc	tex, tr sb vit lstr, v calc	tex, tr sb vit lstr, v calc	tex, tr sb vit lstr, v calc
MRLST: gy-gy brn, sft - mod frm, sb blkly- sb	MRLST: gy-gy brn, sft - mod frm, sb blkly- sb	MRLST: gy-gy brn, sft - mod frm, sb blkly- sb	MRLST: gy-gy brn, sft - mod frm, sb blkly- sb
ply, silty - mot tex, v calc	ply, silty - mot tex, v calc	ply, silty - mot tex, v calc	ply, silty - mot tex, v calc
7000	7000	7000	7000

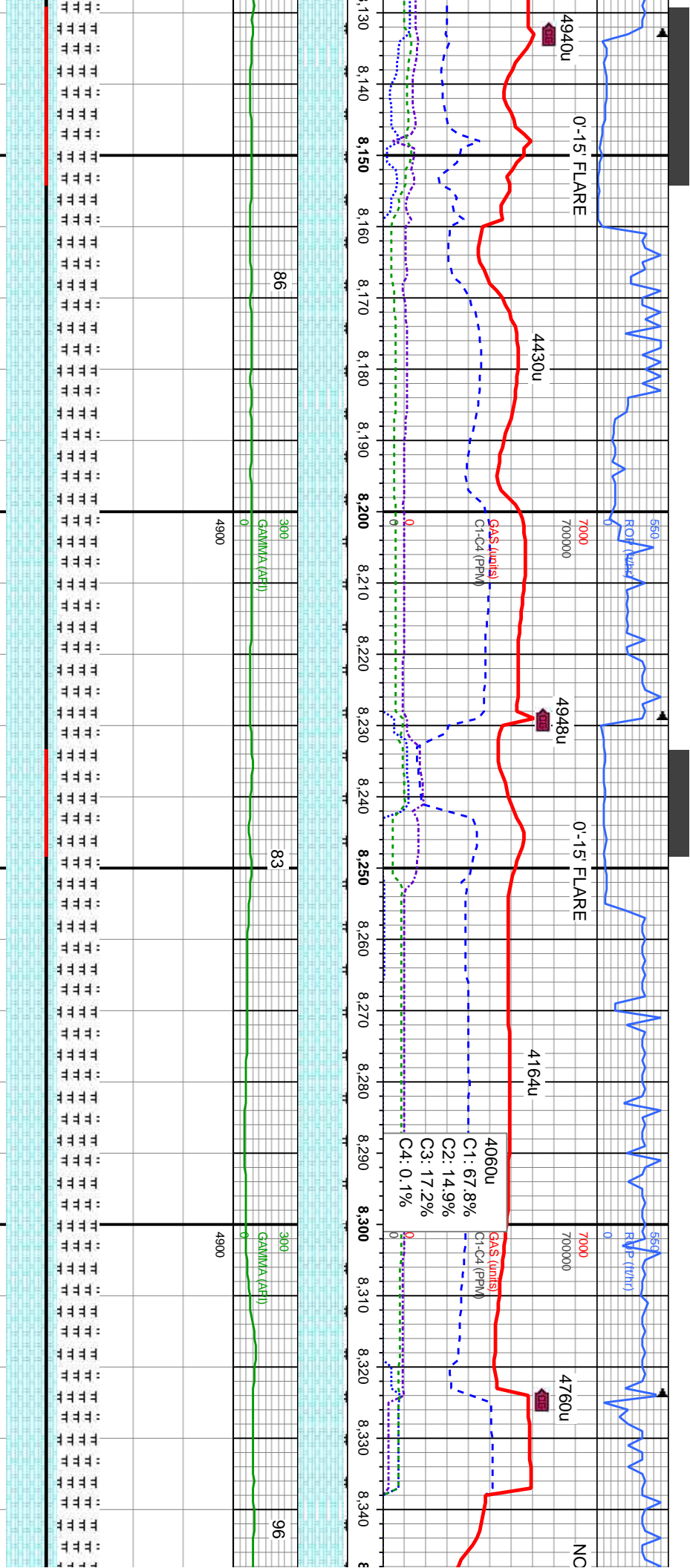






t gy-crm, sl sft - mod frm, sb blk, wxy sb vit lstr, v calc T: gy-gy brn, sft - mod frm, sb blk- sb y - mot tex, v calc	MD: 7.971 ' TVD: 5,683.97 ' Inclination: 88.89 ° Azimuth: 89.48 ° VS: 2,748.2 '	TVD (ft)	CHK: It gy-crm, sl sft - mod frm, sb blk, wxy tex, tr sb vit lstr, v calc MRLST: gy-gy brn, sft - mod frm, sb blk- sb ply, silty - mot tex, v calc	MD: 8.065 ' TVD: 5,684.25 ' Inclination: 90.77 ° Azimuth: 90.19 ° VS: 2,841.99 '	TVD (ft)	CHK: It gy-crm, sl sft, sb blk, wxy tex, tr sb vit lstr, v calc MRLST: gy-gy brn, sft - mod frm, sb blk- sb ply, silty - mot tex, v calc, tr fos frag	CHK: It gy-crm, sl sft, sb vit lstr, v calc MRLST: gy-gy brn, sft - n ply, silty - mot tex, v calc,

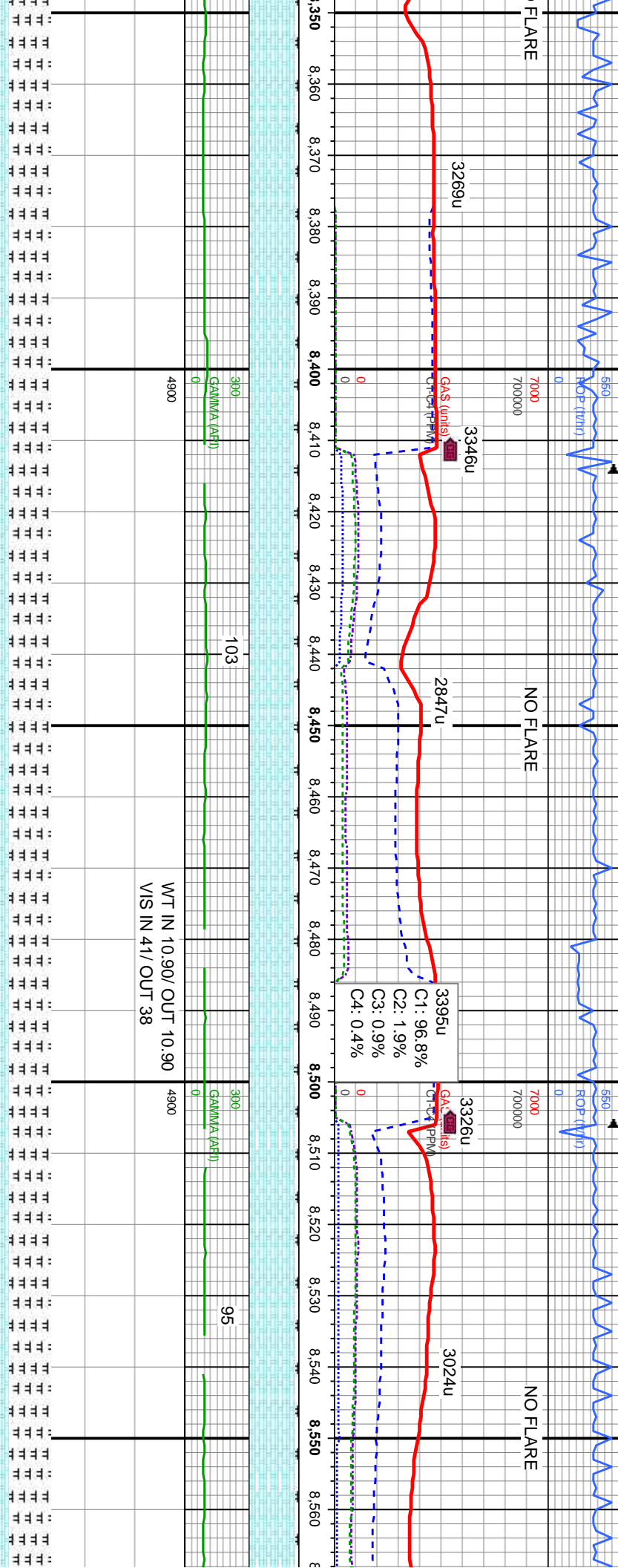




MD: 8,159 ' TVD: 5,683.39 ' Inclination: 90.28 ° Azimuth: 91.48 ° VS: 2,935.66 '	CHK: lt gy-crm, sl sft, sb blk, wxy tex, tr sb vit lstr, v calc MRLST: gy-gy brn, sft - mod frm, sb blk- sb ply, silty - mot tex, v calc, tr fos frag	TVD (ft)	MD: 8,254 ' TVD: 5,684.79 ' Inclination: 88.03 ° Azimuth: 87.06 ° VS: 3,030.47 '	CHK: lt gy-crm, sl sft, sb blk, wxy tex, tr sb vit lstr, v calc MRLST: gy-gy brn, sft - mod frm, sb blk- sb ply, silty - mot tex, v calc, tr fos frag	TVD (ft)







6.66' : 89.69° 37.81° 42'

CHK: lt gy-crm, sl sft, sb blk, wxy tex, tr sb vit lstr, v calc  
MRLST: gy-gy brn, sft - mod frm, sb blk-sb ply, silty - mot tex, v calc, tr fos frag

MD: 8.443' TVD: 5.687.2' Inclination: 89.66° Azimuth: 85.83° VS: 3,219.41'

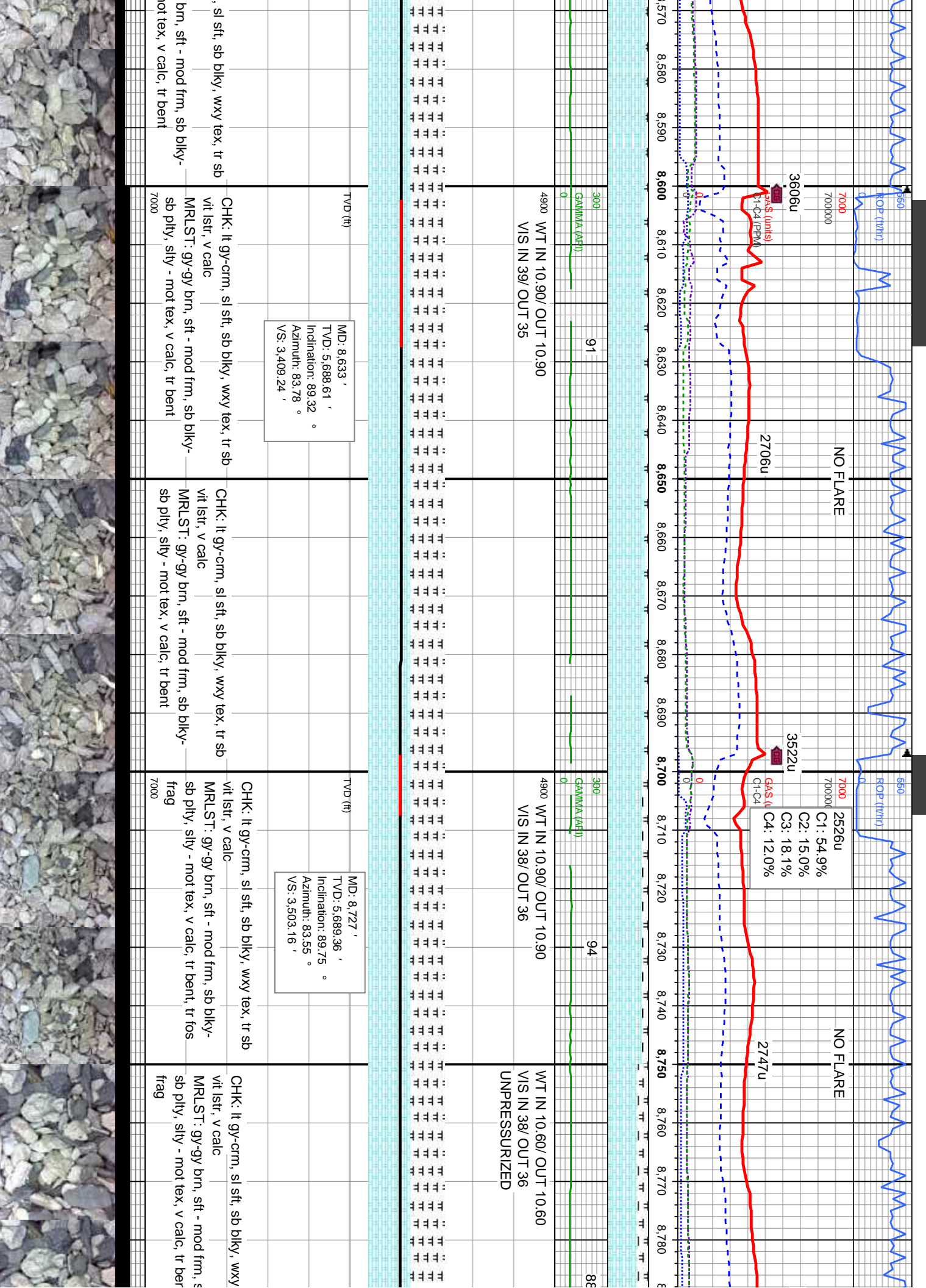
CHK: lt gy-crm, sl sft, sb blk, wxy tex, tr sb vit lstr, v calc  
MRLST: gy-gy brn, sft - mod frm, sb blk-sb ply, silty - mot tex, v calc

MD: 8.538' TVD: 5.687.76' Inclination: 89.66° Azimuth: 82.9° VS: 3,314.36'

CHK: lt gy-crm, sl sft, sb blk, wxy tex, tr sb vit lstr, v calc  
MRLST: gy-gy brn, sft - mod frm, sb blk-sb ply, silty - mot tex, v calc

CHK: lt gy-crm vit lstr, v calc  
MRLST: gy-gy sb ply, silty - r

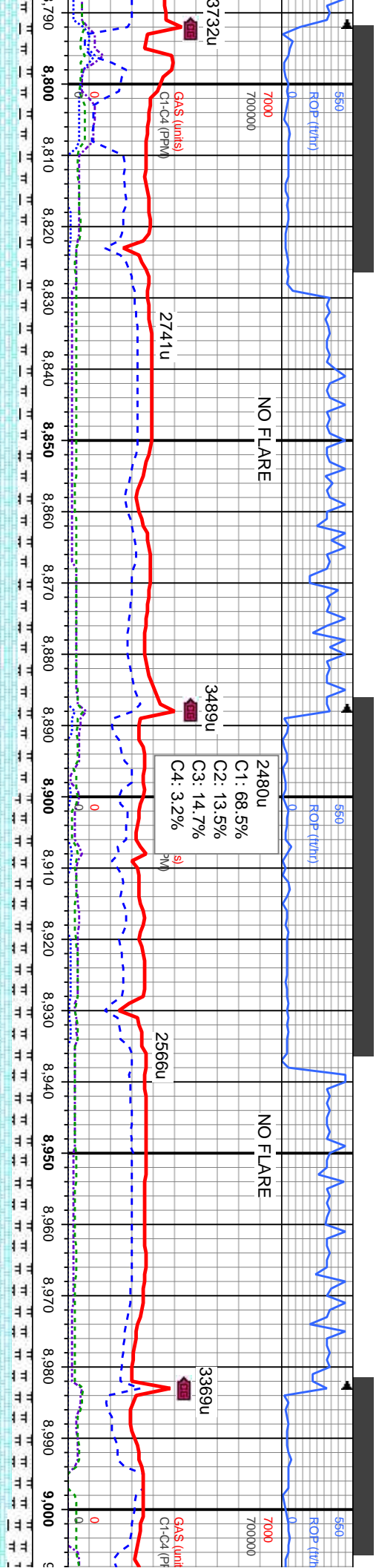




MD: 8.633 ' TVD: 5,688.61 ' Inclination: 89.32 ° Azimuth: 83.78 ° VS: 3,409.24 '	CHK: It gy-crm, sl sft, sb blk, wxy tex, tr sb vit lstr, v calc MRLST: gy-gy brn, sft - mod frm, sb blk- sb pily, silty - mot tex, v calc, tr bent	MD: 8.727 ' TVD: 5,689.36 ' Inclination: 89.75 ° Azimuth: 83.55 ° VS: 3,503.16 '	CHK: It gy-crm, sl sft, sb blk, wxy tex, tr sb vit lstr, v calc MRLST: gy-gy brn, sft - mod frm, sb blk- sb pily, silty - mot tex, v calc, tr bent
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4900	WT IN 10.90/ OUT 10.80 VIS IN 38/ OUT 36 PRESSURIZED	WT IN 10.60/ OUT 10.60 VIS IN 38/ OUT 36 UNPRESSURIZED	4900	WT IN 10.80/ OUT 10.80 VIS IN 34/ OUT 36 PRESSURIZED	WT IN 10.80/ OUT 10.90 VIS IN 34/ OUT 35 PRESSURIZED	4900	WT IN VIS IN UNPRI
300	GAMMA (API)	91	300	GAMMA (API)	90	300	GAMMA (API)
0		0	0		0	0	

MD: 8.822 '   
 TVD: 5.689.82 '   
 Inclination: 89.69 °   
 Azimuth: 83.21 °   
 VS: 3.598.05 '

MD: 8.917 '   
 TVD: 5.690.64 '   
 Inclination: 89.32 °   
 Azimuth: 84.64 °   
 VS: 3.692.98 '

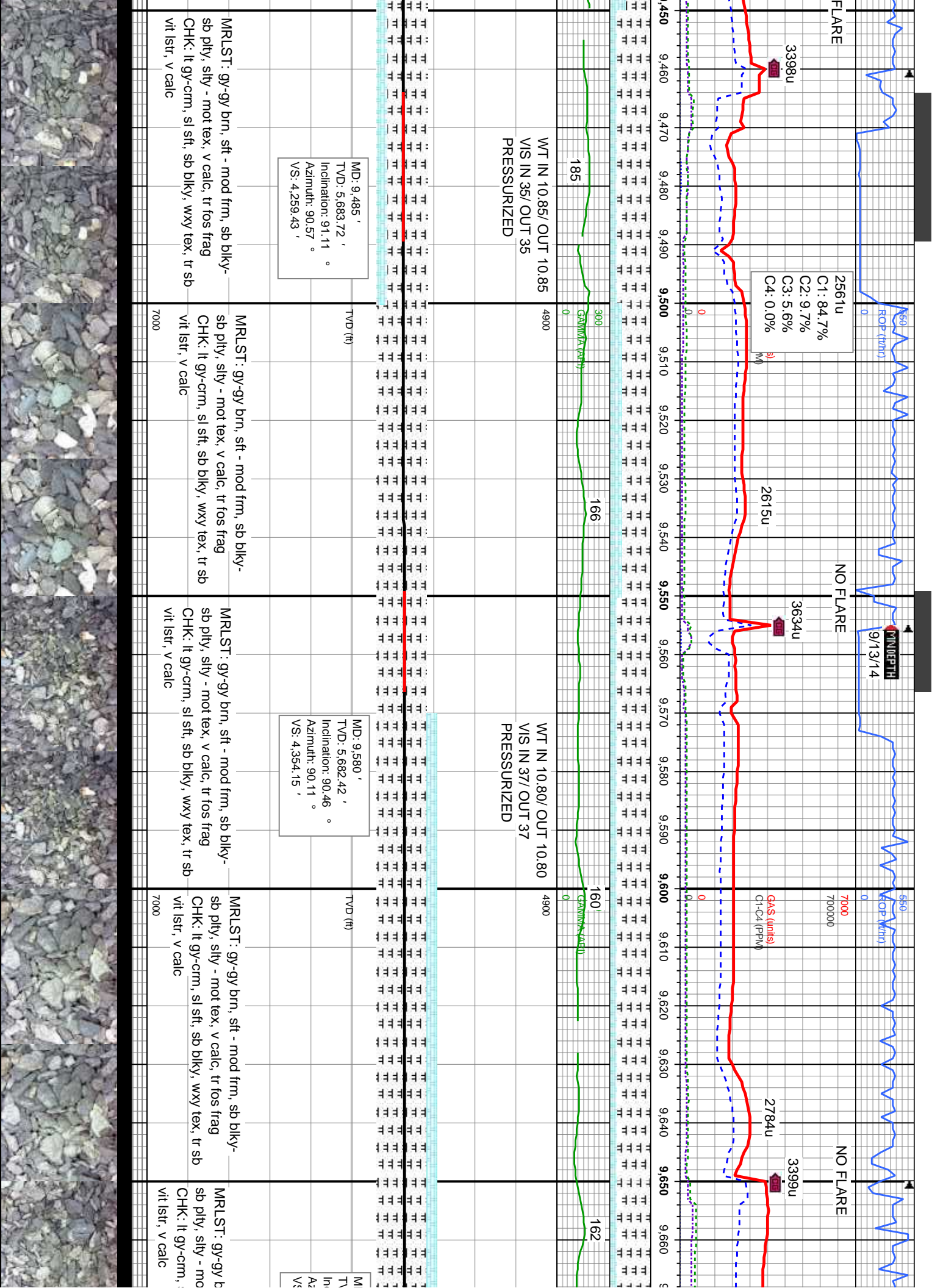
CHK: lt gy-crm, sl sft, sb blk, wxy tex, tr sb vit lstr, v calc MRLST: gy-gy brn, sft - mod frm, sb blk- sb plty, silty - mot tex, v calc, tr bent, tr fos frag	7000	CHK: lt gy-crm, sl sft, sb blk, wxy tex, tr sb vit lstr, v calc MRLST: gy-gy brn, sft - mod frm, sb blk- sb plty, silty - mot tex, v calc, tr bent, tr fos frag	7000	CHK: lt gy-crm, sl sft, sb blk, wxy tex, tr sb vit lstr, v calc MRLST: gy-gy brn, sft - mod frm, sb blk- sb plty, silty - mot tex, v calc, tr bent, tr fos frag	7000	CHK: l vit lstr, MRLS sb plty frag	7000
TVD (ft)		TVD (ft)		TVD (ft)		TVD (ft)	
MD		MD		MD		MD	
TV		TV		TV		TV	
Inc		Inc		Inc		Inc	
Azi		Azi		Azi		Azi	
VS		VS		VS		VS	



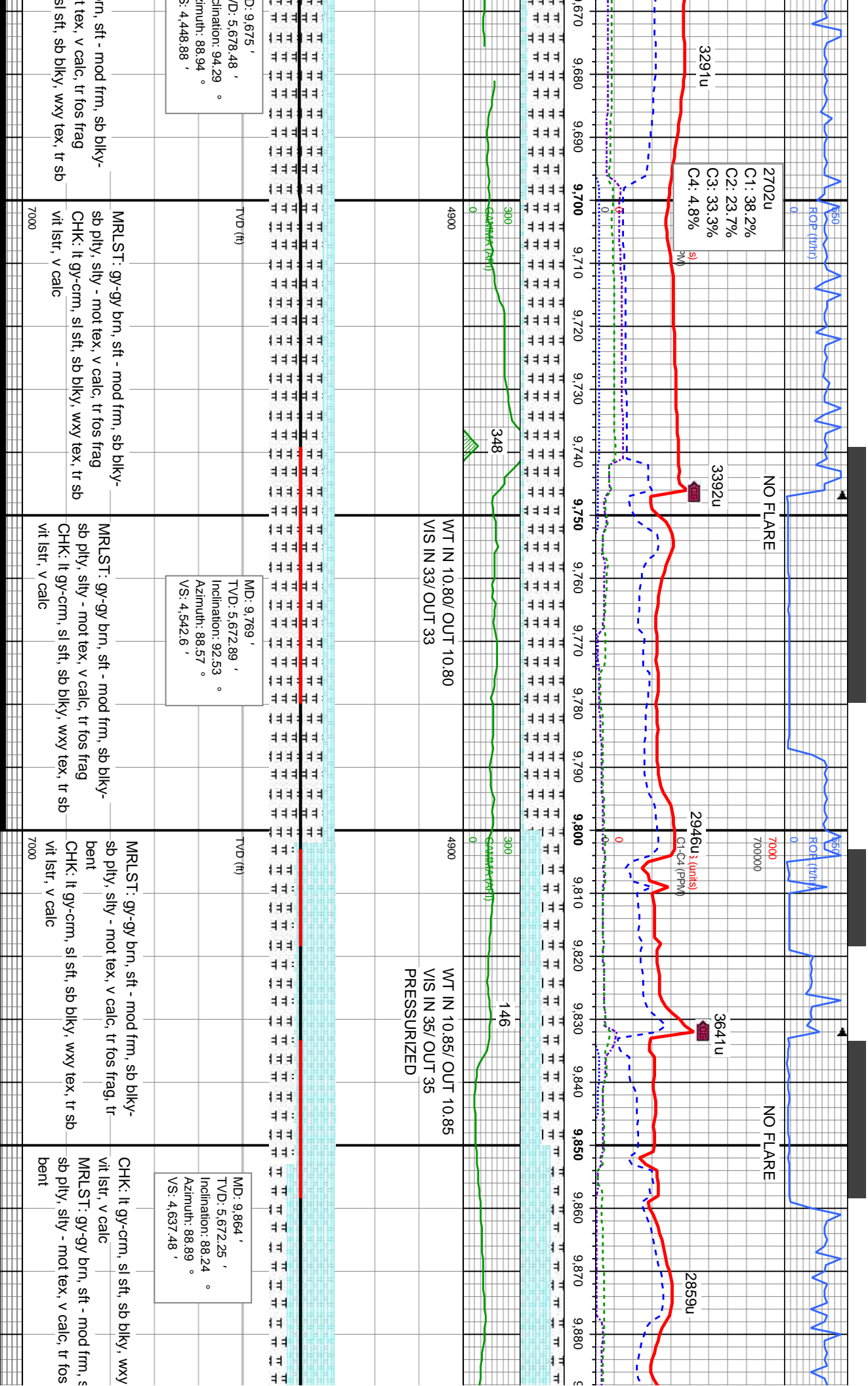












D: 9,675 '   
D/D: 5,678.48 '   
Inclination: 94.29 °   
Azimuth: 88.94 °   
VS: 3,4448.88 '   
TVD (ft)

MRLST: gy-gy brn, sft - mod frm, sb blk-   
sb pfty, silty - mot tex, v calc, tr fos frag   
CHK: lt gy-crm, sl sft, sb blk, wxy tex, tr sb   
vit lstr, v calc   
7000

MD: 9,769 '   
TVD: 5,672.89 '   
Inclination: 92.53 °   
Azimuth: 88.57 °   
VS: 4,542.6 '   
TVD (ft)

MRLST: gy-gy brn, sft - mod frm, sb blk-   
sb pfty, silty - mot tex, v calc, tr fos frag   
CHK: lt gy-crm, sl sft, sb blk, wxy tex, tr sb   
vit lstr, v calc   
7000

MD: 9,864 '   
TVD: 5,672.25 '   
Inclination: 88.24 °   
Azimuth: 88.89 °   
VS: 4,637.48 '   
TVD (ft)

MRLST: gy-gy brn, sft - mod frm, sb blk-   
sb pfty, silty - mot tex, v calc, tr fos frag, tr   
bent   
CHK: lt gy-crm, sl sft, sb blk, wxy tex, tr sb   
vit lstr, v calc   
7000

